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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 09/346,678 | 07/02/1999 | MASAAKI IWANE | 35.C13630 | 2744 |
| 5514 | 7590 | 07/26/2004 | EXAMINER | |
| FITZPATRICK CELLA HARPER & SCINTO 30 ROCKEFELLER PLAZA NEW YORK, NY 10112 | | | DIAZ, JOSE R | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2815 | |

DATE MAILED: 07/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|--------------------------------------|-------------------------------------|--|
| Office Action Summary | Application No. 09/346,678 | Applicant(s) IWANE ET AL. | |
| | Examiner José R. Díaz | Art Unit 2815 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 May 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 10 and 12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 10 and 12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>3/8/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 10 and 12 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claims contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. In the instance case, the limitations “the silicon layers comprise an n+ layer and p- layer of about 30 μm thickness” and “wherein one of said silicon layers having about a 30 μm thickness is provided directly on said electrode”, as recited in claim 10, are not supported by the specification. For example, figures 3B and 5C show silicon layer 26 formed directly on the electrode 27. However, the thickness of the silicon layer 26 is less than about 30 μm [Please note that silicon layer 26 is thinner than layer 25 (figures 3B and 5C), which is the only layer having the claimed thickness of about 30 μm (see page 18, line 26 and page 19, line 1)]. Thus, the specification does not provide support for the claimed limitations.

Claim 12 is rejected to as being dependent upon a rejected base claim.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 10 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Barnett et al. (US Pat. No. 4,818,337).

Regarding claim 10, Barnett et al. teaches a photoelectric conversion element (see figs. 1 and 2) comprising:

an anti-reflection layer (see col. 5, lines 60-61), silicon layers (see steps 1, 5 and 6 in figure 1; see layers 11, 14 and 16 in figure 2; and col. 5, lines 49-57), and an electrode (see layers 18 and 19 in figure 2; and col. 5, lines 56-60), provided from a light incident side (see col. 5, lines 58-60),

wherein all of the silicon layers (see layers 11, 14 and 16 in figure 2) are single-crystal silicon layers (see col. 6, lines 15-18), and

wherein the silicon layers (see layers 14 and 16 in figure 2) comprise an n⁺ layer, and a p⁻ layer (col. 6, lines 44-49) of about 30 μm thickness (see col. 6, lines 44-45), provided from the light incident side (see col. 5, lines 58-60),

wherein a surface of the silicon layers has a (111) plane [Please note that the epitaxial layers 14 and 16 have the same crystal orientation as the (111) substrate (see col. 6, lines 15-18 and 22-23)],

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wherein any deviation of said surface from said (111) plane is within an angle equal to 24/60ths of a degree ($0^{\circ}24'$) [Please note that layers 14 and 16, as stated before, are epitaxially grown on a (111) substrate, thus it is inherent that the surface of the silicon layers (14 and 16) has about 0° deviation from the (111) plane since it is very well known in the art that epitaxial layers maintain the same crystal structure and orientation of the substrate], and

wherein one of said silicon layers (16) is provided directly on said electrode (18) (see fig. 2).

Regarding claim 12, Barnett et al. teaches a p+ layer (14) (col. 6, lines 46-49) is provided between the p- layer (11) (col. 4, lines 26-29) and the electrode (18) (see fig. 2), and the electrode is in contact with the n- layer (16) (see fig. 2 and col. 6, lines 46-49).

Response to Arguments

5. With regards to the claim rejection under 35 U.S.C. 102(b), Applicant's arguments filed May 7, 2004 have been fully considered but they are not persuasive. See claim rejection above, wherein Barnett et al. still anticipates the claimed invention.

Conclusion

6. Applicant's amendment necessitated the new ground of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

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§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Correspondence

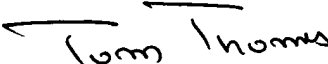
Any inquiry concerning this communication or earlier communications from the examiner should be directed to José R. Díaz whose telephone number is (571) 272-1727. The examiner can normally be reached on Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on (571) 272-1664. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JRD
7/14/04


TOM THOMAS
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